

Applicant: John Bergman
Application No.: 10/531,537
Response to Office action mailed Jan. 6, 2009
Respond filed April 2, 2009

Claim Listing

1–23. (cancelled)

24. (currently amended) A method for the manufacture of a coating for a paper or board web, comprising the steps of:

mixing at least two ~~or more~~ components in a first mixing zone and mixing at least two components in a second mixing zone wherein the first mixing zone and the second mixing zone are ~~two or more mixing zones~~ arranged in series and/or in parallel, or mixing at least one component in a second mixing zone with the mixture of the at least two components wherein the first mixing zone and the second mixing zone are in series, wherein of which at least one ~~some of said two or more mixing zones of the first mixing zone and the second mixing zone~~ is ~~[[are]]~~ pressurized at a pressure level about ~~[[100]]~~ 200 to 1,000 kPa, to thereby form a paper or board web coating;

wherein the paper or board web coating is fed to a pressure screen;

from the pressure screen the paper or board web coating is further led to a machine container; and

from the machine container said paper or board web coating is fed to a coating station and used to form a coating on a paper or board web.

25. (currently amended) The method of claim 24 wherein the pressure level ~~in a mixing zone of said two or more mixing zones~~ is about 200–500 kPa.

26. (currently amended) The method of claim 24 wherein the components ~~to be~~ mixed are in a pressurized space also at least between the pressurized mixing zones.

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27. (currently amended) The method of claim 26 wherein components are supplied to ~~said two or more mixing zones~~ the first mixing zone and the second mixing zone from component feeding pumps, and wherein the mixed components are supplied to ~~[[a]]~~ the machine container, and wherein a mixing arrangement is used, which is pressurized from the component feeding pumps to the machine container.

28. (currently amended) The method of claim 24 wherein at least one of the components to be mixed is led to one of the mixing zones through a deaeration means.

29. (previously presented) The method of claim 24 wherein the temperature of the coating is controlled with a temperature control system arranged in connection with one or more mixing zones.

30. (canceled)

31. (currently amended) The method of claim 24 wherein the components mixed in the first mixing zone or the second mixing zone are ~~one or more mixing zones~~ are fed to a separator, into which an underpressure of approximately 0.5–50 kPa is applied ~~arranged~~.

32. (currently amended) The method of claim 31 wherein ~~[[an]]~~ the underpressure in the separator is ~~[[of]]~~ approximately 2–15 kPa ~~is arranged~~.

33. (canceled)

34. (currently amended) The method of claim 24 wherein the properties of the paper or board web coating mixture and/or a part of the mixture formed by the mixed components are measured with ~~one or more~~ at least one measurement device~~[[s]]~~ arranged after the first mixing zone or the second mixing zone ~~at least one mixing zone~~.

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35-48. (canceled)

49. (currently amended) An apparatus for the manufacture of a paper or board web coating from coating components, the apparatus comprising:

- a first static mixer with a first mixing zone therein;
- a first conduit communicating from a first pressure screen to ~~[[with]]~~ the first mixing zone and transporting thereto a first pigment;
- a second conduit communicating from a second pressure screen to ~~[[with]]~~ the first mixing zone and transporting thereto a second pigment, for mixing therein with the first pigment to define a first mixture;
- a second static mixer with a second mixing zone therein, the second mixer communicating in series with the first mixer to receive the first mixture therefrom;
- a ~~thirst~~ third conduit communicating from a third pressure screen to ~~[[with]]~~ the second mixing zone and transporting thereto a third pigment for mixture with the first pigment and the second pigment ~~other components~~ therein to define a second mixture which is a coating, wherein at least ~~[[some]]~~ one of the first mixing zone and the second mixing zone are connected to a source of pressure ~~pressurized to a pressure level of approximately~~ ~~[[100]]~~ 200–1000 kPa;
- a pressure screen in coating receiving relation to said second mixer;
- a machine container in coating receiving relation to said pressure screen; and
- a coating station in coating receiving relation to the machine container.

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50. (currently amended) An apparatus for the manufacture of a paper or board web coating from coating components, the apparatus comprising:

- a first static mixer with a first mixing zone therein;
- a first conduit communicating from a first pressure screen to ~~[[with]]~~ the first mixing zone and transporting thereto a first pigment;
- a second conduit communicating from a second pressure screen to ~~[[with]]~~ the first mixing zone and transporting thereto a second pigment, for mixing therein with the first pigment to define a first mixture;
- a second static mixer with a second mixing zone therein;
- a third conduit communicating from a third pressure screen to ~~[[with]]~~ the second mixing zone and transporting thereto a third coating component;
- a fourth conduit communicating from a fourth pressure screen to ~~[[with]]~~ the second mixing zone and transporting thereto a fourth coating component for mixture therein with the third coating component to define a second mixture; and
- a conduit extending from the first static mixer and the second static mixer which are arranged in parallel, and communicating with a third static mixer, to combine the first mixture and the second mixture within a third mixing zone within the third static mixer to form a coating, wherein at least some of the first mixing zone, the second mixing zone, and the third mixing zone are connected to a source of pressure of pressurized ~~to~~ a pressure level of approximately ~~[[100]]~~ 200–1000 kPa;
- a pressure screen in coating receiving relation to said second static mixer;
- a machine container in coating receiving relation to said pressure screen; and
- a coating station in coating receiving relation to the machine container.

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51. (new) A method for the manufacture of a coating for a paper or board web, comprising the steps of:

passing a first pigment through a first pressure screen to a first pipe which flows into a first static mixer;

passing a second pigment through a second pressure screen to the first pipe which flows into the first static mixer;

passing a binder through a third pressure screen to the first pipe which flows into the first static mixer, wherein the first pigment, the second pigment and the binder are mixed in the first static mixer at a pressure level of 200 to 1,000 kPa, and form a first mixture which is supplied to a second pipe which flows into a second static mixer;

passing a third pigment through a fourth pressure screen to the second pipe which flows into the second static mixer;

wherein the third pigment and the first mixture are mixed in the second static mixer at a pressure level of 200 to 1,000 kPa to form a second mixture which is supplied to a third pipe which flows into a third static mixer;

supplying an optical brightening agent to the third pipe which flows into the third static mixer, wherein the second mixture and the optical brightening agent are mixed in the third static mixer at a pressure level of 200 to 1,000 kPa to form a third mixture which is supplied to a fourth pipe which flows into a fourth static mixer;

supplying water to the fourth pipe which flows into the fourth static mixer, wherein the third mixture and the water are mixed in the fourth static mixer at a pressure level of 200 to 1,000 kPa to form a fourth mixture which is supplied to a fifth pipe which flows into a dynamic mixer having a rotor and a stator;

wherein the fourth mixture is mixed in the dynamic mixer, and supplied through an outlet to at least one fifth pressure screen having a perforated screen with perforations of approximately 65–300 micrometers in size; and

wherein the fourth mixture after passing through the at least one fifth pressure screen is supplied to a coating station for application to a paper or board web.

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52. (new) The method of claim 51 further comprising passing a fourth pigment through a fifth pressure screen into the second pipe which flows in to the second static mixer, and wherein the fourth pigment and the third pigment are mixed in the second static mixer to form the second mixture.

53. (new) The method of claim 51 wherein the fourth mixture after passing through the at least one pressure screen is supplied first to a machine container from which it is pumped to a deaerating device connected to a source of vacuum of approximately 0.5–50 kPa, and following the deaerating device pumped to a further pressure screen, and then supplied to the coating station.